INJURIES OF THE ELDERLY

KEITH DAYMOND, M.CH.ORTH., F.R.C.S.E., F.R.A.C.S.

Sydney

The elderly patient is susceptible to injury because of certain physiological changes in his bone structure. Due to increasing age his bone structure tends to alter so that there are less bone salts per given volume of bone and the bone trabeculae become weaken. When stress is applied to such a bone it will fracture with greater ease than will tbe bone of a younger adult. In other words, the force needed to break a given bone is more in the young adult than in the elderly.

Three other special circumstances often apply in the elderly, senile osteoporosis, Paget's disease and unsteady gait.

Senile Osteoporosis

This is a condition in which the bones tend to lose their normal bone structure due to hormonal factors. Radiologically the bones are less dense than normal, and it is particularly evident in the vertebrae, where the bone becomes affected by neighbouring pressures. They assume either the biconcave appearance, where the intervertebral discs above and below are able to indent the centre of the body of the vertebrae, or gravity in the upright position exerts a force on the anterior surface of the vertebral body to produce wedging of the bone.

The clinical effect of the latter is a rounded kyphosis giving a stooped appearance. Associated with it are episodes of acute pain in the advanced case, when one of these weaker vertebrae has fractured.

Paget's Disease

This condition can affect patients from middle age onwards. The bones go through a cycle whereby they become hypervascularised and ultimately hypersclerotic. During all stages of the disease the bones tend to fracture readily. The fractures, however, are peculiar in that they may be a series of incomplete or "carrot type" fractures, the name being derived from the similarity of the splits which occur in a carrot if one bends it between one's two hands. Another peculiarity is the site and type of fracture, which is most commonly seen in the upper third of the shaft of the femur and is always a direct transverse fracture. From a practical point of view the fractures in Paget's disease tend to unite satisfactorily but, if an open operation is necessary, the bone may bleed enormously if it is in the hypervascular stage or the bone may be so hard in the hypersclerotic stage that it may be impossible to insert a pin, screw or nail. I have seen the insertion of a Küntscher nail attempted in a case of Paget's disease where the bone virtually exploded into multiple fragments, and another case where the nail became jammed in the bone to such an extent that it could neither be driven further nor withdrawn and had to be cut off with a hacksaw.

Unsteadiness of Gait

The gait of the elderly tends to be awkward owing to poor muscular co-ordination and eyesight. They trip more readily than the younger adult and have less chance of saving themselves due to poorer control and slower reflexes. The fall does not have to be a bad one to fracture femur or humerus.

Regions of Injuries

For convenience I will describe various anatomical regions which are liable to injury in the elderly.

Shoulder

The most common fracture in this region is of the surgical neck of the humerus. Often it is an abduction type of injury and the natural way to treat it is to reduce the fracture and maintain it in adduction. From the viewpoint of the orthopaedic surgeon the shoulder

is one region where radiological accuracy of reduction is unnecessary. My belief is that any reasonable position should be accepted and no attempt be made to obtain perfection in the X-ray. Two weeks, or at a maximum, three weeks should be the limit of immobilization, after which active movements of the shoulder must be commenced. All efforts are made to obtain a rapid return of function, as if sound radiological union is waited for the shoulder may never move again. The elderly cannot tolerate vigorous physiotherapy and a late manipulation may not succeed in breaking down the periarticular adhesions but it may succeed in breaking the shaft of the humerus. Hence, in the elderly, the shoulder must not be allowed the luxury of rest and consequent stiffness.

Wrist

If a patient has a fall on the outstretched hand the resultant fracture, if there be one, varies with the age group. The young child will fracture both bones of his forearm; the older child will displace his lower radial epiphysis; the adolescent or young adult will fracture his scaphoid; the middle-aged or elderly adult will suffer a Colles fracture. The management of the latter group differs with the age of the patient. The elderly adult requires early and continued attention to his shoulder to prevent a periarthritis or frozen shoulder. Also, when the fracture is reduced it is immobilized in the over-corrected position of palmar flexion and ulna deviation, but this position should not be maintained for longer than two weeks. The wrist must then be brought up to the mid position, the ulnar deviation corrected and immobilized in its new position for only a further three weeks (making approximately five weeks in all). After this active exercises are started.

In making the initial plaster after reduction, for all age groups, my own practice is to pad with wool practically all fresh fractures and then apply a strip of rubber about one-inch wide along the dorsum of the limb (a cut-up motor tyre inner tube is ideal for this purpose). The plaster is applied over the wool and rubber and, when almost dry, a longitudinal split is made along the dorsum of the limb over the rubber, leaving about half an inch uncut at each end, which can easily be cut later if necessary. The rubber is then withdrawn. This method, I believe, has never produced an ischaemic limb or a Volkmann's contracture. The same cannot be said for many of the other methods.

Early shoulder movement in Colles fractures is routine, but the fingers are sometimes neglected. They should receive early movement also, and the limb should be freed of oedema by elevation in the first two weeks if necessary. Oedema in the fingers may keep the physiotherapist in business for a short while but it may prevent the patient from ever working again.

Spine

The modern concept of treatment of fractures of the spine without nerve involvement in the young adult is to start an active exercise programme which has the patient up and out of hospital in three to four weeks. The elderly, however, are unable to tolerate too active exercise. The use of a brace is advisable in many cases, not only to alleviate pain, but also to prevent further fractures, particularly in the presence of osteoporosis. The type of brace is unimportant. All have merit and my routine is to use the one which suits the particular patient. The use of prolonged hormone therapy is a useful addition to the physical forms of therapy in the treatment of osteoporosis of the spine.

Hip

Fracture of the hip is second in frequency to Colles fracture in the elderly patient, but causes a tremendous hazard due to the length of recumbency required. The value of early operation and early ambulation is appreciated by everyone, but I believe that the practice of this concept could be improved. The operation should be done at the earliest possible moment, provided the patient has a sufficiently high haemoglobin value. In my opinion it is wrong for the operation to be delayed to suit the convenience of theatre and radiological staffs. It is during this waiting period that the patient, in spite of the physiotherapist, develops hypostatic pneumonia and, in spite of good nursing, develops sacral bed sores.

My choice for the type of operation varies with the site of the fracture and the type of patient. For one reason or another some

patients are unable to use crutches in the postoperative period. Examples can be taken from some patients I have in hospital at the moment; one woman has rheumatoid arthritis and her hands are quite useless for crutches, another is grossly obese, one has congestive cardiac failure, one is too feeble; all these patients are unsuitable for crutches and unsuitable for prolonged recumbency. Most fractured necks of femur occur in the elderly, but some are physically young at eighty or eighty-five, whereas others are old at sixty-five or seventy.

In the transcervical and subcapital fractures I advocate a Smith-Petersen pin operation in the young or potential crutch-walkers, and an Austin Moore arthroplasty in the old or unlikely crutch-walkers. After the latter operation those patients with chest and cardiac complications may be got out of bed the next day. Some of my colleagues start their patients walking on the first or second day. Most ought to be weight bearing and able to leave the hospital in three to four weeks. With the Smith-Petersen pin operation, provided the patient has a suitable home he should be out of hospital in four weeks, but not bearing weight on the limb. The physiotherapist is of great value in getting these patients to pass their various stages of convalescence quickly.

The pertrochanteric fractures and intertrochanteric fractures are treated by a pin plate operation of one type or other. I advocate the Thornton type as the most suitable. Here again, early ambulation is recommended, with partial weight-bearing at six to eight weeks rather than at three months or more as formerly taught. However, it is important that the patient understands the term "partial weight-bearing", as full weight-bearing at this early stage is not acceptable.

Subtrochanteric fractures and fractures of the upper femoral shaft are treated by Küntscher nailing which allows early weight-bearing and early discharge from hospital, thus preventing months in a Thomas bed splint and overcoming the problem of the posttraumatic stiff knee.

Knee

Knee injuries in the elderly usually take the form of fracture of the supracondylar region of the femur or upper end of tibia. On a slightly modified scale my remarks about shoulder injuries apply here. The modification is that the knee is immobilised only until the earliest visible callus on X-ray appears, when splintage is discarded and exercise started. Six weeks is about the optimum time.

6. Ankle injuries

This aspect of the subject has been covered in a previous paper "Injuries Around the Ankle".[1] My remarks followed the general trend of what I have already said here, namely that early active movement of an injured joint is advocated as soon as it is possible to move the joint without refracturing the bone. In the case of sprains, immobilization should be carried out for a period long enough to allow adhesion of the ends of the fibres of the ruptured ligament, but not long enough for adherence of the ligament to the capsule of the joint.

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[1]AUSTRALIAN JOURNAL OF PHYSIOTHERAPY, 1961, 7 : 17.